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FOR INQUIRIES: PLEASE QUOTE ITEM & REPORT NO.

April 11, 2011

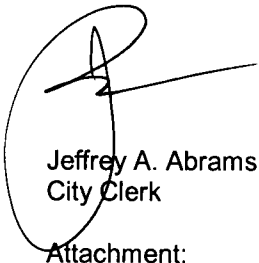
Mr. Denis Kelly, Regional Clerk
The Regional Municipality of York
17250 Yonge Street, Box 147
Newmarket, ON
L3Y 6Z1

Dear Mr. Kelly:

**RE: INFLOW AND INFILTRATION REDUCTION & LONG TERM WATER CONSERVATION
STRATEGIES CITYWIDE**

Attached for your information is **Item 1, Report No. 3**, of the Priorities and Key Initiatives Committee regarding the above-noted matter which was adopted without amendment by the Council of the City of Vaughan at its meeting of April 5, 2011.

Sincerely,



Jeffrey A. Abrams
City Clerk

Attachment:

Extract

1. York Region – Environmental Services Committee Report, February 9, 2011
Inflow and Infiltration Reduction Strategy (Adopted by Regional Council on February 17, 2011)
2. York Region – Environmental Services Committee Report, February 9, 2011
Long Term Water Conservation Strategy (Adopted by Regional Council on February 17, 2011)

JAA/pa

CITY OF VAUGHAN

EXTRACT FROM COUNCIL MEETING MINUTES OF APRIL 5, 2011

Item 1, Report No. 3, of the Priorities and Key Initiatives Committee, which was adopted without amendment by the Council of the City of Vaughan on April 5, 2011.

1 INFLOW AND INFILTRATION REDUCTION & LONG TERM WATER CONSERVATION STRATEGIES CITYWIDE

The Priorities and Key Initiatives Committee recommends approval of the recommendation contained in the following report of the Commissioner of Engineering and Public Works, dated March 21, 2011:

Recommendation

The Commissioner of Engineering and Public Works, in consultation with the Commissioner of Finance and City Treasurer, recommends:

1. That Council endorse the Inflow and Infiltration Reduction and the Long Term Water Conservation Strategies that have been developed in collaboration with the area municipalities and endorsed by Regional Council on February 17th, 2011, subject to minor adjustments to the final drafts arising out of the pre-submission consultation with the Ministry of the Environment;
2. That through development and endorsement of the Inflow and Infiltration Reduction Strategy, York Region and the City commit to:
 - develop and maintain this Strategy including the programs, goals and inter-agency and regulatory reporting requirements for staged reduction of inflow and infiltration over the next 20 years;
 - recommend to future Councils that they commit funds for inflow and infiltration reduction that is economically justified by the avoidance of future treatment and conveyance costs;
 - measure wastewater flows before and after carrying out construction/rehabilitation works on sewers and to document inflow and infiltration expenditures and flow reduction measures; and
 - continue to work together in a collaborative manner over the life of the Strategy and to commit the appropriate staffing and financial resources towards implementation of the Strategies based on a business case analysis.
3. That staff report back to a future Finance and Administration Committee on the financial details associated with the implementation of the Inflow and Infiltration Reduction and Long Term Water Conservation Strategies; and
4. That a copy of this report be forwarded to York Region.

Contribution to Sustainability

Inflow and infiltration are unwanted sources of water within the existing City and Regional sanitary sewerage systems. By taking steps to reduce and eliminate these sources of excess water, additional conveyance capacity becomes available, thereby contributing to a more sustainable infrastructure network and increasing overall operational efficiency.

Water conservation policies and related efforts will assist in the protection of natural resources and long term water supply, maximizing sustainable growth and development, and minimizing energy consumption.

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The proposed joint York Region and Local Municipal Inflow Infiltration Reduction and Long Term Water Conservation Strategies are consistent with the objectives of the City's Community Sustainability and Environmental Master Plan (Green Directions Vaughan, April 2009). The policies, decision making framework and implementation plans related to the reduction of inflow and infiltration and water conservation will assist in the pursuit of:

- Sustainable growth and development;
- Minimizing energy consumption;
- The creation of a City with sustainable built form;
- The conservation and protection of our long term water supply, and
- Sharing sustainable best practices and ideas between and among municipal staff and the community.

Economic Impact

There are no immediate budgetary impacts resulting from the adoption of this report.

The Inflow and Infiltration Reduction Strategy will be supported by a collaborative long term funding model based on a cost sharing approach between the two tiers of local governments.

The key funding principles are:

- A set rate will be collected by both the local and Regional level as identified through the needs of the Strategy and as agreed to by the municipal partners.
- The amount collected at the local level will be used to address priorities identified both through the Strategy and as determined by each local municipality.
- The amount collected at the Regional level will be used to address Regional inflow and infiltration priorities both at the Regional and local level.
- The allocation of Regional funds intended for use in the local systems will be managed and allocated by a joint team with staff representatives from each municipality and the Region. Funding will be granted based on the most effective application to achieve the desired inflow and infiltration improvements as quickly as possible.

The City currently budgets approximately \$1.2 million annually for the maintenance of the existing sanitary sewer system. Additional funding and resources for the Strategies are being requested as part of the draft 2011 Water/Wastewater Budget. It is anticipated that as further monitoring and investigation is done throughout the City's sewerage system, additional funding and resources may need to be allocated in future operating and capital budgets to effectively implement the initiatives and programs set out in the Strategies.

Communications Plan

One of the key mandates of the Strategies is to implement a comprehensive communications, education, and advocacy plan to clearly message the environmental benefits of the Inflow and Infiltration Reduction and Long Term Water Conservation Strategies to the various stakeholder groups including residents, businesses and the construction industry.

Purpose

The purpose of this report is to seek Council's endorsement of the Inflow and Infiltration Reduction and Long Term Water Conservation Strategies, which have been prepared by York Region in collaboration with the area municipalities.

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Background

Wastewater servicing in York Region is multi-jurisdictional based on a two tier governance structure. York Region is responsible for major pumping stations, trunk sewers and treatment plants. The area municipalities are responsible for the local collection sewerage systems and pumping stations that outlet into the Regional trunk system.

On March 31, 2010, the Ministry of the Environment approved the Individual Environmental Assessment for the Region's Southeast Collector Trunk Sewer Project subject to a series of conditions. One key condition required the Region to develop an Inflow and Infiltration Reduction Strategy, which shall include a program for the reduction of inflow and infiltration in the Southeast Collector Trunk Sewer from both the Regional and local municipal sewerage systems. This Strategy shall include reduction priorities, targets, timelines, tactics and initiatives, and associated implementation costs.

In order to develop the comprehensive Strategy, the Region formed an Inflow and Infiltration Task Force in April 2010. The Task Force established a Water & Wastewater Steering Committee that is comprised of representatives from each of the nine municipalities and the Region. The Steering Committee is responsible for reviewing inflow and infiltration issues and formulating an overall direction for the development of the Strategy.

On June 8th, 2010, Vaughan Council adopted the following recommendation with respect to the development of a joint Regional and Area Municipal Inflow and Infiltration Reduction Strategy:

"That in partnership with the Region of York, the City of Vaughan agrees to actively participate in the Inflow and Infiltration Reduction Task Force to:

- continue to seek out sources of inflow and infiltration;*
- adopt standards and guidelines intended to reduce inflow and infiltration in new developments and within existing systems; and*
- Develop adequate funding and cost sharing principles to address future remediation projects."*

The Water and Wastewater Task Force has been meeting on a regular basis since April of 2010. Senior staff from Development / Transportation Engineering, Public Works and Finance has participated in these meetings. On January 31, 2011, staff provided a report to the Priorities and Key Initiative Committee on the status of the joint Regional and Municipal Water and Wastewater Task Force, and the development of the proposed strategies for inflow / infiltration reduction and long term water conservation.

Subsequently, on February 15th, 2011, Council adopted the following recommendation:

"That staff be directed to report back to a future Priorities and Key Initiatives Committee meeting on the final recommended York Region and Local Municipal Inflow Infiltration Reduction and Long Term Water Conservation Strategies and implementation details."

Inflow and Infiltration Reduction and Long Term Water Conservation Strategies

On February 17th, 2011, Regional Council endorsed the recommendations of the reports to the Regional Environmental Services Committee meeting on the draft Inflow and Infiltration Reduction and Long Term Water Conservation Strategies, copies of which are included as Attachments No. 1 and 2 to this report. These Strategies along with a proposed implementation plan will be completed and submitted to the Ministry of the Environment by March 31, 2011.

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Inflow and Infiltration Reduction Strategy

The draft Inflow and Infiltration Reduction Strategy is defined by a series of program areas and activities, which are highlighted below:

1. Overall Program Goals and Inflow and Infiltration Targets

Based on Ministry of the Environment (MOE) approval conditions related to the Individual Class Environmental Assessment Study for improvements to the York-Durham Southeast Collector Sewer, York Region and all local municipalities must commit to a 10% reduction in peak flows due to inflow and infiltration over the next 20 years through water efficiency and inflow and infiltration reduction programs. This target must be achieved throughout the entire Regional and local municipal sewerage and water systems. The reduction of wet weather flows together with water conservation efforts will minimize total conveyance, treatment and disposal system costs and improve overall system security and efficiency.

2. Monitor and Analyze Flows

Monitoring will measure wet weather flow response in the sanitary sewer system to help identify areas of concern, isolate problem areas, and provide guidance for areas that require additional field investigation. Continuous and permanent flow monitoring over an extended time period is critical in identifying these variations in flow. A variety of flow metering techniques will be deployed to meet the requirements of the Strategy. The monitoring program will be developed early on in the Strategy and will include details such as flow meter type, meter accuracy, data quality and management procedures, financial costs, meter relocation planning, etc.

3. Investigate and Mitigate

The Strategy describes the processes that will be applied to investigate the severity, extent and location of the inflow and infiltration sources. Detailed field investigations using fog and dye testing, CCTV inspections, and manhole inspections will be conducted in areas that are identified as high priority - direct connections from roof downspouts and cross connections, degrading infrastructure or improper installation.

Subject to the results of the investigations, solutions will be identified and specific rehabilitation techniques will be selected based on cost effectiveness, criticality, risk of failure, expected lifecycle / performance improvements, and environmental impacts.

4. New Construction and Capital Projects

The Strategy describes the appropriate commissioning standards that will be applied to new sewerage systems to ensure design conformance.

5. Financial Management

The objective of the financial management component of the Strategy is to develop a sustainable source of funding to support the long term implementation that is equitable to the partners and community while addressing inflow and infiltration reduction targets. Based on the Region's projected estimates, an initial funding target of \$100 million over a 20 year period was used to assess the potential funding requirements. This equates to a future annual investment of \$5 million per year across the Region. This Strategy requires that each local municipality contributes and maintains a specific and sustainable funding allocation towards the inflow and infiltration reduction program. A preliminary list of program activities associated with the required funding includes the following:

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- Flow monitoring
- Inspection programs
- Data analysis
- Development of common guidelines and standards
- Continuous improvement
- Communication programs
- Rehabilitation/replacement programs
- Pilot tests

Funding for the inflow and infiltration reduction program will come from water and sewer rates.

6. Communication and Management

A comprehensive communication plan has been identified as one of the components required to successfully achieve inflow and infiltration reduction in York Region. The Region and area municipalities shall jointly oversee the communication, education and advocacy programs to ensure the messaging meets the evolving program, and to ensure the programs are effectively delivered to the various stakeholders. A communication and advocacy team will work closely with other members of the program team to ensure current and future works comply with all applicable regulations.

7. Reporting Inflow and Infiltration Reduction

An annual report will be presented to the Ministry of the Environment detailing the progress on implementing the Strategy including inflow and infiltration reductions. The first report shall be provided one year following finalization of the Strategy (March 31, 2012) and every 12 months thereafter. The report will describe the status of each of the milestone activities and the progress towards the stated inflow and infiltration reduction target.

In support of the Region's annual report to the MOE, each local municipality will be required to plan for and develop an annual Inter-Agency Summary Progress Status as well as achievement reports. The Inter-Agency report will contain information that describes the local municipality's inflow and infiltration reduction activities that have occurred during the previous year and activities anticipated for the future.

8. Continuous Improvement

The Strategy describes the continuous efforts required to improve the way services or programs are implemented and focuses on areas which may require enhancement as the Strategy is implemented.

Long Term Water Conservation Strategy Components

The Long Term Water Conservation Strategy builds on the success of the "Water for Tomorrow" program, which was adopted by York Region in 1998. The proposed Long Term Water Conservation Strategy details specific conservation and efficiency programs that will need to be implemented by both the Regional and local municipalities over the next 20+ years.

Water conservation related programs will improve water management practices that will in turn reduce and enhance the beneficial use of water. The value and cost-effectiveness of water-use efficiency can be measured in terms of conserving and protecting our long term water supply; maximizing sustainability; and minimizing energy consumption. The basic components of the Long Term Water Conservation Strategy, which was endorsed by York Region on February 17th, 2011 are highlighted below:

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1. Best-in-Class Water Conservation and Efficiency Measures

The Strategy describes the preparation, review and analysis of best-in-class water conservation and efficiency programs, initiatives, strategies and tactics adopted by other jurisdictions throughout the world. It has been created by reviewing water efficiency and conservation practices worldwide, and adopting those that are technically, environmentally and economically feasible for implementation in York Region.

2. Development of Performance Targets and Timelines

Performance targets will be developed in conjunction with the Region and area municipalities which will establish a breakdown of the water savings targets and timelines based on continuation of current "Water for Tomorrow" programs and implementation of new programs and tactics.

3. Consultation With All Stakeholders

All aspects of the Long Term Water Conservation Strategy were informed by findings from the public engagement and consultation process. Public consultation sessions were held in September and October 2010 to engage a wide variety of stakeholders throughout the Region. These sessions provided public outreach and education initiatives for water efficiency and conservation programs. The Strategy includes a comprehensive on-going communication plan which includes education and an advocacy plan.

It is important to note that overall water conservation will also result in a reduction in flows entering the City and Regional sanitary sewerage systems, thereby making these systems more efficient and sustainable.

Governance and Strategy Leadership

The Region intends that both Strategies will be championed and led jointly by the Water and Wastewater Task Force with overall leadership, direction and assistance being provided by Regional staff. As the Regional Strategies are implemented over the next 20 years, the Task Force will continue to provide primary leadership for the Strategy as it represents the interests of both the Region and each of the area municipalities.

Regional Assignment of Servicing Capacity

The Ministry of the Environment conditions of approval for the Southeast Collector Sewer Individual Class Environmental Assessment require that specific environmental sustainability targets related to inflow and infiltration reduction and water conservation be achieved in both the Regional and local municipal sewerage systems. Accordingly, Regional assignment of servicing capacity to local municipality's is contingent upon participation in the development and implementation of the Inflow and Infiltration Reduction and Water Conservation Strategies. The City's continued participation in the implementation of these Strategies will ensure that future distribution of servicing capacity will be available to the City to provide for the planned growth envisioned in the City's Official Plan.

Vaughan's Current Inflow and Infiltration Reduction Program

Enhanced sanitary sewer inspection work throughout Vaughan's local sewerage system has been underway over the last several years as part of York Region's pilot project. This work has been funded by the Region and has been spearheaded by the City's Public Works Department, in close cooperation with Development Engineering staff. Approximately \$135,000 in fog testing and camera inspection work was completed in Vaughan as part of the Region-funded project. The Region is now reviewing the data collected in order to determine the extent of inflow and infiltration within Vaughan's local sewerage system for areas that have been monitored to date.

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In addition to the work completed for the Region, City Engineering and Public Works staff has been actively involved in inflow and infiltration reduction for many years. Ongoing routine maintenance activities associated with inflow and infiltration reduction include:

- Closed circuit (CC) TV inspections of sewer pipes;
- Fog and dye testing;
- New development inspections;
- Manhole inspections and repairs;
- Cross connection investigation and repair;
- Lateral repairs;
- Mainline repairs; and
- Sewer monitoring.

Large scale sewer replacement projects are also undertaken by the Engineering Services Department to improve the overall condition of the City's sewer network which in turn reduces inflow and infiltration. To meet the targets and objectives set out in the Inflow and Infiltration Reduction Strategy, it is anticipated that there will be a need to augment and expand the City's current program.

Relationship to Vaughan Vision 2020 / Strategic Plan

In consideration of the strategic priorities related to Vaughan Vision 2020, the recommendations of this report will assist in:

- The pursuit of excellence in service delivery;
- Planning and managing growth and economic vitality;
- Leading and promoting environmental sustainability;
- Maintaining assets and infrastructure integrity;
- Ensuring and enhancing community safety, health and wellness;
- Ensuring financial stability; and
- The demonstration of leadership and promotion of effective governance.

This report is consistent with the priorities previously set by Council, however additional resources will be required to implement the final Strategies. As the strategy development progresses, staff will submit funding requests through the appropriate capital and operating budget process in order to effectively meet our local obligations related to these initiatives.

Regional Implications

Through the development and implementation of the Strategies, the Region and the nine local municipalities have the opportunity to demonstrate leadership in inflow and infiltration reduction and long term water conservation within the industry and contribute to the sustainability of the water and wastewater systems. On February 17th, 2011, Regional Council endorsed both the draft Inflow and Infiltration Reduction and Long Term Water Conservation Strategies.

Conclusion

The endorsement and implementation of the Inflow and Infiltration Reduction and Long Term Water Conservation Strategies will result in increased system capacity in both local and Regional servicing systems thereby allowing the City and the Region continued growth in a more sustainable and environmentally friendly manner.

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It is anticipated that additional funding and resources will need to be allocated in future operating and capital budgets to successfully implement the initiatives and programs set out in the Strategies.

Attachments

1. York Region – Environmental Services Committee Report, February 9, 2011
Inflow and Infiltration Reduction Strategy (Adopted by Regional Council on February 17, 2011)
2. York Region – Environmental Services Committee Report, February 9, 2011
Long Term Water Conservation Strategy (Adopted by Regional Council on February 17, 2011)

Report prepared by:

Jennifer Cappola-Logullo, Water / Wastewater Engineer, Ext. 8433
Michael Frieri, Manager of Engineering Planning & Studies, Ext. 8729
Andrew Pearce, Director of Development/Transportation Engineering, Ext. 8255

(A copy of the attachments referred to in the foregoing have been forwarded to each Member of Council and a copy thereof is also on file in the office of the City Clerk.)